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EFFICACY OF TIMED SPRING PYDRIN® APPLICATIONS FOR CONTROL OF EARLY CONEWORM DAMAGE

by

J. C. Weatherby and H. N. Wallace[1/]

Abstract

Cone clusters sprayed with Pydrin every 2 weeks beginning on March 31, April 14, or April 28 resulted in more healthy cones than found in clusters sprayed every 2 weeks starting after April 28. Approximately 3% of the cones in clusters initially sprayed on May 12 were lost to early spring coneworm attacks. Clusters which were not sprayed had similar losses to clusters initially sprayed on May 12 and May 26.

INTRODUCTION

In order to maximize the efficacy of spring pesticide applications, the applications must be timed to coincide with susceptible lifestages of each coneworm species. DeBarr et al. (1982) have established a narrow window of opportunity for maximum control of Dioryctria disclusa Heinrich. One application timed ca. 7 days after peak pollen flight suppresses D. disclusa populations. Another single generation species, D. merkeli Mutuura and Munroe, also causes early season losses. Dioryctria merkeli infested cones die after elongation has begun but before reaching full size. Because damage caused by D. merkeli occurs slightly later than D. disclusa damage, maximum control may be achieved with an additional insecticide application.

This special project was conducted as a preliminary attempt to increase efficacy of spring pesticide applications by timing applications on a biweekly schedule.

1/ Entomologist and Biological Technician, respectively, USDA Forest Service, Southern Region, State and Private Forestry, Forest Pest Management, Alexandria Field Office, Pineville, LA.

METHODS

Two seed orchards in west central Alabama were selected because the 1982 pheromone survey indicated that both orchards had the potential for coneworm damage in 1983. Twelve loblolly clones were selected on March 8, 1983, at Orchard A and 10 clones were selected on March 30, 1983, at Orchard B. The following summarizes the treatments applied to each tree:

Orchard A

TREATMENT	REP/CLONE	DATES OF PESTICIDE APPLICATION
1	4 branches	3/31,4/14,4/28,5/12,5/26
2	4 "	4/14,4/28,5/12,5/26
3	4 "	4/28,5/12,5/26
4	4 "	5/12,5/26
5	4 "	Control - No Applications

Orchard B

TREATMENT	REP/CLONE	DATES OF PESTICIDE APPLICATION
1	5 branches	4/14,4/28,5/12,5/26
2	5 "	4/28,5/12,5/26
3	5 "	5/12,5/26
4	5 "	5/26
5	5 "	Control - No Applications

Pydrin (2 ml/liter) was applied with a hand sprayer to designated branches according to the previously described spray schedule. Each cone cluster was shielded during the application to prevent contamination of other sample branches. The first applications made at Orchard A (3/31) corresponded to peak pollen flight while the first applications at Orchard B (4/14) occurred approximately 2 weeks after peak pollen flight. On June 14, 1983, each sample branch was checked and all cones were classified as healthy, coneworm dead, coneworm damaged, or unknown damage.

RESULTS AND DISCUSSION

Results of this preliminary timing project are summarized in tables 1 and 2 for Orchards A and B, respectively. Neither orchard experienced much early season damage. No significant differences in the percent healthy cones were found between the 5 treatment means at either orchard. Initial sprays applied on May 12 or 26 resulted in fewer healthy cones than those applied on March 31, April 14, or April 28. Paired comparisons

(one-tailed t-test) between the treatment means of the percent healthy cones in clusters initially sprayed on April 28 and percent healthy cones in clusters initially sprayed on May 12 indicate a significant difference ($P < .10$) between spray effectiveness in Orchards A and B.

Very little coneworm damage occurred on branches when biweekly spraying was started prior to May 12, approximately 6 weeks after peak pollen flight. Based upon these results, a spray during the first month after peak pollen flight is beneficial in preventing coneworm damage to second year cones. If an orchard manager anticipates significant D. disclusa killed cones, a spray ca. 7 days after peak pollen flight is warranted (DeBarr et al. 1982). For additional spring protection another spray should be applied prior to 6 weeks post pollen flight.

Table 1. Numbers of healthy and coneworm-killed cones (CW) in clusters sprayed at biweekly intervals beginning on March 31, April 14, April 28, and May 12, 1983 (Orchard A - west central Alabama).

	TREATMENT														
	1 - 3/31			2 - 4/14			3 - 4/28			4 - 5/12			5 - Control		
Clone	Total	Healthy	CW	Total	Healthy	CW	Total	Healthy	CW	Total	Healthy	CW	Total	Healthy	CW
551	7	7	0	9	9	0	9	9	0	8	7	0	7	5	0
17-58	8	8	0	8	7	1	7	6	0	11	11	0	8	6	1
547	13	13	0	11	11	0	15	15	0	14	14	0	13	13	0
553	12	12	0	15	15	0	14	14	0	12	11	0	10	10	0
17-57	7	7	0	7	6	0	7	7	0	10	10	0	9	8	0
17-16	10	10	0	13	13	0	6	6	0	11	11	0	12	12	0
556	16	15	0	12	12	0	10	9	0	8	7	1	10	9	0
562	7	7	0	8	7	0	7	7	0	9	8	1	7	7	0
17-26	8	8	0	13	13	0	15	15	0	14	13	0	16	16	0
17-63	13	13	0	13	13	0	9	9	0	10	10	0	7	7	0
563	15	13	0	11	10	0	15	14	0	8	6	2	14	14	0
543	12	12	0	14	13	0	15	15	0	15	15	0	17	17	0
TOTAL	128	125	0	134	129	1	129	126	0	130	123	4	130	124	1
%		98	0		96	1		98	0		95	3		95	1

Table 2. Numbers of healthy and coneworm-killed cones (CW) in clusters sprayed at biweekly intervals beginning on April 14, April 28, and May 12, and May 26, 1983 (Orchard B - west central Alabama).

	TREATMENT														
	1 - 4/14			2 - 4/28			3 - 5/12			4 - 5/26			5 - Control		
Clone	Total	Healthy	CW	Total	Healthy	CW	Total	Healthy	CW	Total	Healthy	CW	Total	Healthy	CW
644	12	12	0	14	14	0	10	10	0	13	13	0	13	10	2
691	14	14	0	14	14	0	11	9	0	11	11	0	14	14	0
588	7	7	0	8	8	0	8	8	0	7	7	0	9	8	0
683	6	5	0	8	8	0	5	4	0	5	4	1	6	6	0
626	11	11	0	10	10	0	9	9	0	10	10	0	12	9	0
628	7	4	0	8	5	0	10	8	1	9	7	1	8	7	0
449	11	11	0	12	12	0	11	11	0	12	11	0	12	11	0
629	13	13	0	12	12	0	16	13	0	11	10	0	12	12	0
676	14	14	0	13	12	0	11	10	1	13	10	3	11	8	3
600	13	13	0	14	12	1	8	6	1	9	9	0	9	9	0
TOTAL	108	104	0	113	107	1	99	88	3	100	92	5	106	94	5
%		96	0		95	1		89	3		92	5		89	5

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Prepared by: Julie C. Weatherby
Entomologist

Henry N. Wallace III
Biological Technician

Approved by: for HARVEY V. TOKO
Staff Director
Forest Pest Management

SOUTHERN REGION, STATE AND PRIVATE FORESTRY
USDA, FOREST SERVICE, ATLANTA, GA 30367